

Tribhuvan University  
**Institute of Science and Technology**

2079

☆☆

Bachelor Level/First Year/First Semester/Science

Full Marks: 60

**Bachelors in Information Technology (BIT 252)**

Pass Marks: 24

(Artificial Intelligence)

Time: 3 Hours

*Candidates are required to give their answers in their own words as far as practicable.*

The figures in the margin indicate full marks.

**Section A**

Long Answer Questions

**Attempt any TWO questions.**

**[2x10=20]**

1. What is knowledge, representation and reasoning? When a machine is said to be passed Turing test? Give any two examples of constraint satisfaction problem. [3+5+2]
2. Why CNF is necessary? From the following facts, show that “Charlie is a mammal” using FOPL based resolution method. [3+7]
  - Cows, pigs and horses are mammals
  - The child of a horse is a horse
  - Bluebeard is a horse
  - Bluebeard is Charlie’s father
  - Child and father are inverse relations
  - Every mammal has a father.
3. Justify that AI can’t exist without searching? Solve the following 8 puzzle problem using Hill climbing search algorithm.

1	2	4
5		7
3	6	8
Initial State		

1	4	7
2	5	8
3	6	
Goal State		

**Section B**

Short Answer Questions

**Attempt any EIGHT questions.**

**[8x5=40]**

4. Explain the different ambiguities related to NLP. [5]
5. Differentiate between goal based agent and utility based agent. [5]
6. Describe the concept of learning by analogy with an example. [5]
7. What is the task of activation function? What are its types? [1+4]
8. How Dempster - Shafer theory can be used for reasoning with certainty? Explain with an example. [5]
9. Define expert system. Describe its architecture. [1+4]
10. What is the purpose of alpha beta pruning? Explain. [5]
11. Illustrate your own scenario for shopping at my mall and represent those concepts using scripts. [5]
12. Define deterministic and non-deterministic environment. Differentiate between BFS and DFS. [2+3]